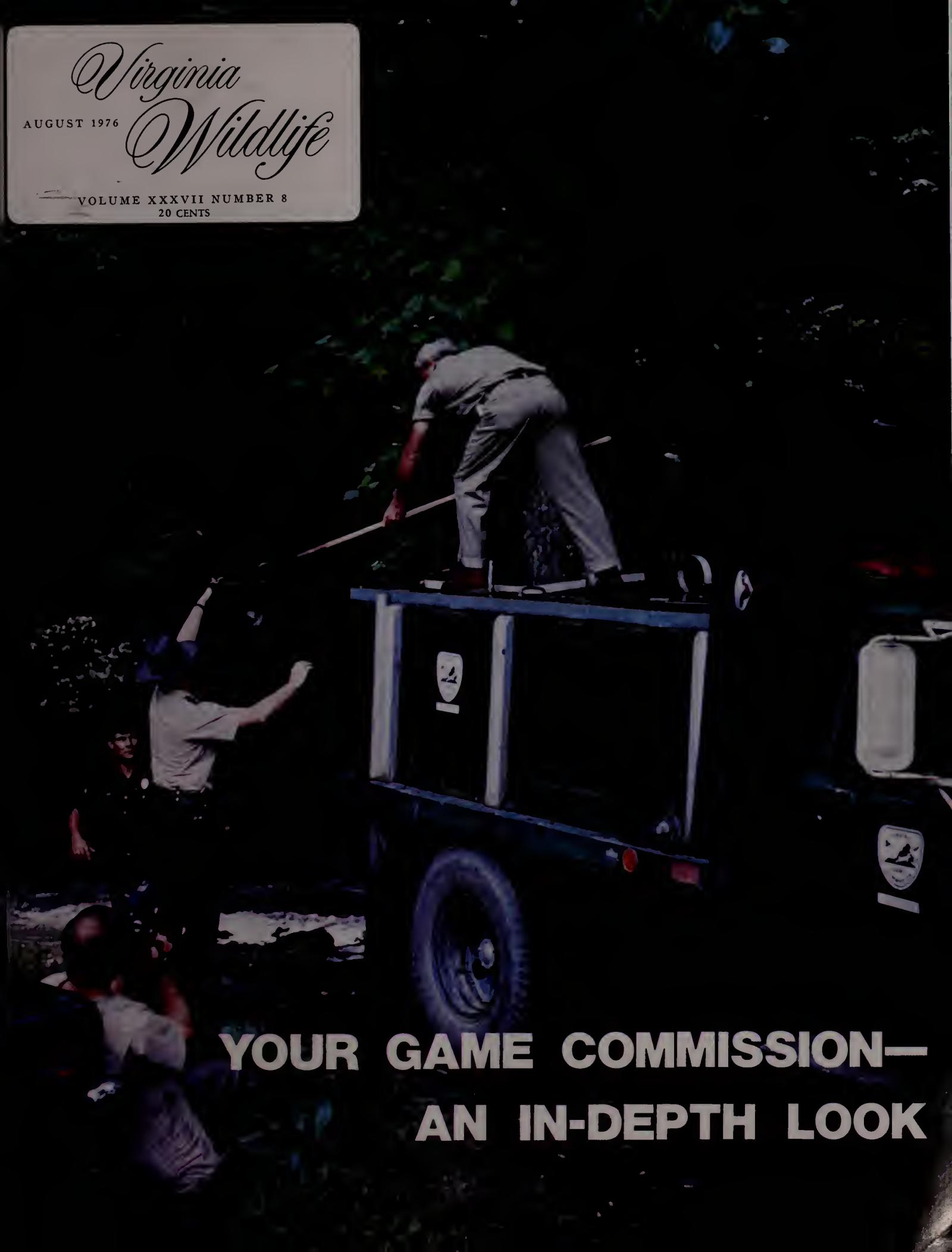


# Virginia Wildlife

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**YOUR GAME COMMISSION—  
AN IN-DEPTH LOOK**

# Virginia Wildlife

August, Volume XXXVII/No. 8

Dedicated to the Conservation of Virginia's  
Wildlife and Related Natural Resources

COMMONWEALTH OF VIRGINIA  
MILLS E. GODWIN, JR., GOVERNOR

Commission of Game and Inland Fisheries

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COVER: In a cooperative fish stocking effort on the Bullpasture River, personnel from fish, law enforcement and game divisions work together to put catchable-size trout into the stream. The stocking process shown here is being filmed by the education division as part of an upcoming movie on Virginia's trout program.

Photo by Commission photographer Carl "Spike" Knuth.

# Editorial

## LET'S TAKE A LOOK

Let's take a look at the Commission of Game and Inland Fisheries. Lots of fine people are doing it. The Commission on State Governmental Management, headed by Senator William B. Hopkins, is doing it. The Joint Legislative Audit and Review Commission, while studying the State's land management programs and policies is doing it, because the Game Commission manages more acres of land in more separate tracts than any other agency in State government. And the House of Delegates Committee on Conservation and Natural Resources resolved during the last session of the General Assembly to spend 1976 taking a good look at the Commission of Game and Inland Fisheries, its structure, policies, programs, and the statutes which it administers and enforces. So, while all this looking is going on, we invite *Virginia Wildlife* readers to take a good look too. Most of this issue of the magazine is devoted to helping you to do just that. Fortunately, we have nothing to hide.

In this bicentennial year Virginians are doing a lot of looking backward, to see where we started in order to have a better understanding of where we are and where we are going from here. The Game Commission does not have a two hundred year history to look back upon, but a look backward is still relevant to an understanding of where we are now and where we are going.

When the Commission was in its youth sportsmen were an endangered species, not because hunting and fishing were under attack as they are today, but because we were running out of places to hunt and fish, and running out of game and fish to hunt and fish for when we got there. Picking an early year at random, say in 1922, Virginians enjoyed a reported deer harvest of 630 animals. Last season Virginia hunters recorded a harvest of over 63,000 deer, one hundred times the earlier harvest figure. Even more significantly, the 1975 deer harvest was 50% greater than the average of the last ten years, and undoubtedly there were a lot more live deer left in the woods after that 1975 hunting season than were here when Captain John Smith arrived at Jamestown.

Results of the Commission's turkey management efforts have been less dramatic numerically, but equally satisfying. In the fall of 1975 and spring of 1976 hunters were able to bag about twice as many of the big birds as were reported harvested annually in the early 1920's. What is dramatic, though, is that the State turkey population has greatly increased while environmental changes have caused a continuous decline in turkey numbers east of the Blue Ridge, the species' former stronghold, the population having been largely shifted, through scientific management techniques, to areas west of the Blue Ridge where in many cases the bird had been virtually extinct since the turn of the century.

Again looking backward to get a bearing on where we are today, in the freshwater fishery realm we find landlocked striped bass, muskellunge, northern pike and other game fish which were unknown in Virginia until comparatively recently, and as Outdoor Writer Bob Gooch noted in a recent newspaper column, either fish in Virginia's waters are getting bigger or anglers are getting better, because both the number of citation fish reported each year and the State size records keep going up.

We have achieved many goals, but we must continue constantly to set new ones. Where do we go from here? This is a question that must be answered not only by the agency itself but ultimately by the public it serves. We can see clearly the course we have followed in the past. The course we must steer in the future is less obvious.

Lots of people are taking a close look at the Commission these days, and are raising some serious and pertinent questions, about our land acquisition and development policies, our funding, and our responsiveness and accountability to the public. Should the Commission have and exercise the power of eminent domain, so as to acquire by condemnation if necessary the lands and waters it deems necessary for fish and wildlife management? (The Commission does not have such power, and has not sought it.) Are the funds entrusted to the Commission being spent wisely? How far should the Commission go in providing for multiple recreational uses on lands acquired entirely by the expenditure of funds contributed by sportsmen through the purchase of hunting and fishing licenses and the payment of federal excise taxes on their hunting and fishing equipment? Beyond protection (law enforcement), what is to be the responsibility of the Commission with respect to "managing" non-game, including endangered, species; and what should be the source of funds for discharging such responsibility, if any? What shall be the role of the Commission of Game and Inland Fisheries in administering the State's growing scenic rivers program?

These are not questions to which we have final answers, but neither are they questions which we are ignoring until final answers are suddenly handed down through someone's superior insight or inspiration. Things just do not happen that way. Looking back at where we have been, and with a clear fix on where we are, these are questions that we are grappling with and to which we hope to find answers through the same step by step evolutionary process that has served us well in getting here.

So let's all take a good look, and participate in setting the course. But at the same time let's keep steady hands on the helm. —J.F. Mc.

# From Distant Beginnings

By GAIL HACKMAN



THE Virginia Game Commission is celebrating a birthday in 1976. It may not be a bicentennial, but 1976 marks the 60th anniversary of organized effort toward wildlife conservation in the Old Dominion.

The roots of the present Commission of Game and Inland Fisheries reach back as far as 1890. At that time interest in wildlife conservation was beginning to spread, particularly in the New England states, where market hunting and illicit gunning and trapping had reduced the level of game to new lows. This reduction of the once plentiful supply of wildlife was beginning to have its effects in the strengthening of wildlife protective measures by legislative bodies in those states. This trend of tightened wildlife laws in the northern states drove many of the market hunters and game buyers to the south and west. Unfortunately, Virginia became a target for their operations.

As more wild game disappeared each year, Old Dominion sportsmen became increasingly concerned about the situation. In 1889 a concerted effort to create a state agency

for the conservation of bird and animal life in Virginia was begun under the auspices of the Virginia Division of the League of American Sportsmen. Their efforts, with the help of the Virginia Audubon Society, resulted in a proposed legislative bill in 1912 to create a wildlife agency for the Old Dominion. The bill failed to pass. This same

bill was presented again in 1914, again with no success.

These early efforts were not without results, however. Virginia citizens, notably the Farmers Union and the Farmers Institute, were coming to realize the economic value of certain game birds and animals. Because of this growing concern and support, sufficient pressure was exerted upon the Legislature to bring about passage of the bill. The bill was finally enacted into law and on June 17, 1916, a new era of wildlife protection and propagation began in Virginia.

Malcolm D. "Mac" Hart  
Pioneer in wildlife  
conservation in Virginia



THE ORIGINAL Department of Game and Inland Fisheries was set up under a commissioner who was also chief of the Commission of Fisheries. Under the stipulations of the bill creating the agency, the General Treasury of the State could not contribute one cent to its support. Only moneys from the "game protection fund" could be used to pay for Commission expenses. This threw the entire burden of conserving wildlife resources of the state upon the shoulders of sportsmen.

Early fish stocking methods included loading trout onto trucks in large buckets. Wardens were called upon to help in this operation when hatchery personnel were inadequate. Getting the fish from hatchery to stream was the order of the day and, although methods have improved greatly, the principle is still the same today.



This early financial stipulation is still effective in Commission financing today. Since no state tax or general fund revenues may be used by the Game Commission for fish and wildlife programs, all such programs and projects are funded by hunting, fishing and trapping license moneys, with some special funds available from a federal excise tax on guns and ammunition and on fishing and archery tackle.

During its first decade the Game Commission established a game warden system, a State Game Farm and a largemouth bass hatchery. In addition, two livestock projects were attempted. One hundred fifty elk were imported and liberated in the mountainous areas of the state; and twenty-five hundred English ring-neck pheasants were distributed in several counties.

**THE OLD DEPARTMENT** of Game and Inland Fisheries, as an adjunct of the Fisheries Commission, continued until 1926, when the present Commission of Game and Inland Fisheries was formed. The new law, passed in 1926, continued

the original department, except that the organization would be in the hands of a five-man Commission appointed by the Governor and subject to confirmation by the Senate. The chairman of the Commission was designated administrative head of the department, with power to employ or authorize the executive secretary to employ such personnel as needed to care for the duties of the Commission. It was at this point that the Commission of Game and Inland Fisheries was divorced from the Fisheries Commission, now the present-day Marine Resources Commission.

Under this new law, one regular game warden position was available in each county and in each first-class city in the state. In addition ten supervising wardens could be employed, along with ten wardens who could be stationed where most needed.

During 1927 the Commission prescribed certain activities for the law enforcement division in the field. Examination tests for supervisors and new forms and records were created to secure definite data

in regards to Commission activities. Aside from the protection afforded by the field force, much work in propagation and conservation of wildlife was started; continued operation of the State Game Farm, wildlife sanctuaries, distribution of game, and furnishing seed to farmers for wildlife crops. This much-needed work is still carried out by the field force.

The Commission regarded education work as a necessary part of the well-coordinated wildlife program. As a result the Commission continued its bi-monthly publication *Game and Fish Conservationist* (established in 1922) which contained details of the operation of the Commission. The Game Commission's education division today publishes this monthly magazine *Virginia Wildlife* which continues the efforts of early education officers to reach the public on matters of wildlife conservation and management.

Game propagation programs expanded in 1927-28. In addition, three trout hatcheries were established and put into operation.



*The fascination of bear hunting is a thrill that does not diminish with age.*

*Piney Mountain game refuge patrol ranger instructing refuge patrolman on work plan.*



IN 1928 the Commission received from the General Assembly the power to shorten hunting seasons, a power formerly held by the individual counties. A combined hunting, trapping and fishing license was established for those persons fishing in the non-tidewater section of the state. This was the first angling

license needed by residents of the state. The additional revenue from fishermen allowed continuation and expansion of fish hatchery and stocking programs.

Between 1920 and 1940, Game Commission programs slowed with the national economy. However, existing programs continued, and two additional fish hatchery facilities were built.

In 1938 the Game Commission embarked upon a cooperative agreement with the U.S. Forest Service to provide wildlife management on National Forest land that lay within the boundaries of the Old Dominion. This program, a successful effort still in effect today, is partly funded by the \$1.00 National Forest Stamp that is required of all persons who hunt or fish on national lands.

The Pittman-Robertson Act, passed by the U.S. Congress in 1937, was another milestone in game management. This act provides supplementary funds to individual states from revenue taken in from an 11 percent excise tax on guns and ammunition. In 1951 Dingell-Johnson Act provided similar federal aid funds for fish management, derived from a tax on sport fishing gear.

The Commission organization remained fairly static until 1942. At that time the Virginia Legislature reorganized the administration from a five-man Commission to a system of representation from each congressional district. Today, this is a ten-man Commission, empowered to choose its own executive director to implement its programs. Other important legislation of the decade provided for separate hunting and fishing licenses, their increasing funds available for the Commission's management activities.

BY THE 1950's fish and wildlife management in the Old Dominion

had begun to mature. Instead of stocking imported animals onto available land, the Game Division was concentrating its efforts on producing and maintaining suitable habitat for wildlife, since wildlife needs adequate food and cover all year around in order to survive and multiply. While the Game Division didn't give up its stocking efforts, game is now stocked on habitat that has been made suitable for the species, and that lacks sufficient breeding stock. Many of these projects were and still are funded by moneys provided by the Pittman-Robertson Act of 1937, in addition to revenue contributed by licensed hunters throughout the State.

The game division also began its program of waterfowl management in the early fifties, when it purchased its first designated waterfowl refuge area at Hog Island. This area, located on the James River, was just the beginning of the waterfowl refuge program, which provided resting and feeding areas for migrating waterfowl, a wildlife resource which was becoming endangered.

Another great stride made by the game division during the late forties and fifties, was the restoration of the wild turkey and the beaver, both species nearly exterminated in the Old Dominion. The wild turkey remains one of the most popular game species in Virginia, and the spring gobbler season has become one of the most popular of hunting seasons. In 1953, a legal trapping season was initiated for beaver, a situation many old-time hunters believed would never happen in Virginia again.

THE COMMISSION'S fish division continued its early stocking efforts throughout the fifties. All stocking was done in line with sound biological principles and all waters stocked by the Commission were

*Executive Directors of the Virginia Commission of Game and Inland Fisheries. Top to bottom: T. E. Clarke (1942-46); I. T. Quinn (1946-1958); Chester F. Phelps (present Director, since 1958).*

open to public fishing. In 1964 the fish division's warmwater hatchery and stocking policy underwent a change. The practice of stocking adult warmwater fish in waters already supporting established breeding populations was discontinued. Hatchery production of warmwater fish was converted entirely to production of fingerlings that are used to re-establish breeding populations following disastrous fish kills and to introduce warmwater game fish into suitable waters where they do not already exist. Experimental introduction of brown trout into Virginia waters, was begun in this same year. Today, brown trout thrive in many of Virginia's streams and lakes, yielding some as large as fourteen pounds.

Like the game division, the fish division realized the need to improve and create habitat in which fish can live, as constant stocking and restocking is not only expensive, but useless as well in the long run. During the 1960's the fish division began concentrating on the purchase or construction of public lakes, that would provide optimum habitat for fish species, and also provide optimum recreational opportunities for Virginia anglers. Today the fish division stocks over 1,000,000 trout each year, along with striped bass, smallmouth and largemouth bass, crappie, muskellunge and sunfish. They maintain 21 public fishing lakes throughout the state, provide fish stocking recommendations to private citizens and corporations, carry out aquatic weed control, fishing site investigations, Corps of Army Engineers Investigations, and continually search for new and better ways of providing healthy stock fish for Virginia public waters.

**THE GAME DIVISION** in the sixties, in keeping with the growing need for suitable habitat, expanded

and improved their early methods of land management. The expensive techniques of herbaceous seeding and bulldozing of wildlife clearings were gradually replaced by more practical land treatments; prescribed burning, mowing, disking, chemical spraying and carefully planned and controlled timber harvests. These land use programs are still in use, and are continually being researched for better and more efficient methodology.

On the 166,000 acres of Game Commission owned land, timber management activities are stressed to manipulate wildlife food and cover. On game management units having a significant acreage of open farm land, an intensified program of leasing agricultural land to local farmers was adopted. Through this technique dove fields were created, wildlife habitat was produced and surplus grain was accumulated for waterfowl feeding on refuges.

Today the Game Division manages nearly two million acres of land, either through purchase or cooperative agreement. Stocking is still underway, to replace breeding stock, or to start new populations where habitat has been made suitable. Live-trapping animals and transplanting them in less populated areas is another technique that has been tested and found successful. In 1971 the first two-day pheasant season was permitted. That experimental season has been increased to five days and provides additional sport for Virginia hunters.

From its inauspicious beginning in the cloakroom of the Senate chamber, to its present 2,000,000 acres, 21 public fishing areas, four field offices and seven fish hatcheries, the Game Commission has had a long and fruitful career. Happy sixtieth birthday, Virginia Game Commission. Many happy returns.



# Game and Fish Research

By CARL "SPIKE" KNUTH

"SEARCHING AGAIN AND AGAIN." "You've come a long way Baby," goes the dialogue of a well-known cigarette commercial proclaiming womanhood's advancements up to and including her right to her own brand. The same could be said for a relatively new profession; a profession that is just now reaching the maturity and stature that deserves recognition.

The game and fish research and management specialist of today is a far cry from the manager and biologist of the past.

While a vast majority of research has produced useful game and fish management programs, some tools and programs devised through research have already been abandoned in favor of working in harmony with nature to provide similar results. Research is an ever-learning process and researchers institute changes when popular techniques are proven wrong.

Despite increased scientific knowledge, it still takes a great deal of personal effort, attention to detail, and intense dedication to come up with the most workable answers to questions involving the welfare of our wildlife resources. In addition, it also takes time, because research programs can't be shortsighted. A simple observation of "what appears to be" one year may be disproved two years later. Often, "what has always been believed to be true," is suddenly found not to be! A gradual loss of a certain species of bird, fish or mammal cannot always be remedied by simply stocking. An underlying habitat condition or problem may exist that only research can dig out.

All is not failure or frustration however. On the plus side, fish and game research has played a large part in helping to maintain unbelievably

excellent game and fish populations, despite the onslaught of unguided human "progress."

Sportsmen of the Commonwealth need to be aware of the fact that through scientific, biological research, personal dedication and grass-roots common sense, our natural resources can have a future. Research biologists in Virginia are involved in a great many programs that will help us all to understand the needs of our wildlife and how we can live in harmony with nature--an interdependency in which both animals and man can benefit.

One dictionary defines "research" as "a careful search" or "a close searching;" "a studious inquiry;" a "critical and exhaustive investi-

gation or experimentation having for its aim the revision of accepted conclusions, in the light of newly discovered facts." It is interesting to note also that "re" in research is a prefix denoting "back to an original or former state" or "again," such as remember. In other words, research is a "searching again," or a case of searching again and again.

**BLACK BEAR.** Typical of these fact-finding missions to learn more about our native wildlife is the current black bear research program. This big game investigation is a harvest, aging and tagging study scheduled to be conducted at least into 1980. The purpose of the black bear harvest study is to evaluate the



The black bear has been the subject of intensive study recently by Game Commission biologists. Drugs are used to calm the bear so that he can be handled. Biologists weigh a tranquilized bear.



status and condition of Virginia's black bear population. Bear harvest figures are obtained by means of a questionnaire survey and a compulsory check station system. This system, operated by volunteers and supervised by game wardens, provides data annually on each harvested bear. Harvest information and any other influencing factors are analyzed by the district biologists of those counties reporting bear kills. This enables biologists to assess bear population levels.

Other phases of the black bear studies are concerned with aging and tagging of trapped bears so as to determine the breeding ages, female production and pre-hunting and post-hunting age and sex structure of

wild black bears in Virginia on hunted or non-hunted bear populations. Biologists and trapping specialists attempt to live-trap and tag a minimum of 50 black bear each year from April through September on lands of the Shenandoah National Park, George Washington National Forest and Virginia Game Commission. Bears are trapped mainly with culvert traps baited with meat scraps. The bait is attached to a triggering device on one end which releases a heavy steel door at the far end when the bait is tampered with.

The trapped bears are drugged by means of a syringe-dart propelled by a special pistol. Bears are sexed, weighed, measured and checked for lactation and reproductive condi-

tion. A first premolar is extracted from the upper jaw on each bear trapped. These are sent to a laboratory for aging by cementum annuli-counting rings as in aging a tree. Tooth samples and lower jaws, or parts of them, are collected from hunters and taxidermists as well, to add data to the aging study. The bears are then ear-tagged with a metal tag and numbers corresponding to the ear tags are tattooed inside the upper lip. The animals are generally released at the trap site unless removal and transplanting of certain individuals is deemed necessary.

Age and sex grouping are then analyzed statistically to evaluate differential vulnerability or hunter

*Banding birds, pheasant above, turkey below, allows the biologists to compile accurate data on the bird's movements.*

selectivity according to age, sex, type and length of season, period of year, method of hunting and hunted vs. non-hunted areas. These studies will aid in formulating future harvest regulations to the overall benefit of Virginia's black bear population.

**WHITE-TAIL DEER.** One of the continuous studies Virginia Game Commission biologists are involved in is the white-tailed deer harvest and population trend study. The object of the study is to monitor and evaluate the status and condition of Virginia's deer herd. As in the bear harvest study, deer harvest figures are obtained by means of a questionnaire and a compulsory check station system. The tag data that is collected is analyzed by district and research biologists. Hunting pressure and hunter success is estimated by information obtained from the questionnaire survey, as well as damage stamp sales from 13 counties west of the Blue Ridge.

Deer populations are estimated periodically by biologists with the aid of Commission field personnel. In addition annual miscellaneous deer mortality reports are recorded on game tags by Commission game wardens, other field personnel and Virginia Highway Agency personnel. The physical condition of various deer herds are monitored by sexing and aging; recording antler measurements and weights of harvested yearling males; and making abomasum parasite counts.

The deer abomasum parasite count is actually another research project in itself. Each year, a total of five deer are collected from four designated areas east of the Blue Ridge and three areas west of the Blue Ridge during August and September. To conduct the count, the deer are dissected and their stomachs and intestinal organs



inspected for stomach worms. The abomasum is the fourth stomach in the deer. A high incidence of stomach worms may mean the animal is undernourished.

In addition to the deer collected by biologists, five samples are collected from each of the same areas during the hunting season. These deer are collected from hunter-harvested deer at check stations. The stomachs and intestines collected are preserved and later analyzed, the resultant data being used to determine if there is any correlation between samples collected during the high infestation period of late summer and during the fall-winter hunting season. The main object of the study is to determine if the abomasum parasite counts during the hunting season are applicable for determining herd and range conditions.

**WILD TURKEY.** Game Commission biologists are also involved

in a wild turkey and population trend study, which is entering its third year. The objective of this study is to observe and evaluate the status and condition of Virginia's wild turkey populations. As with bear and deer, this is accomplished mainly through Virginia's unique and highly successful system of check stations which requires all turkeys bagged be reported with data recorded on game tags. The first primary wing feather and a breast feather are collected from each bird by station operators which will tell biologists the age and sex of the bird. This information included with other data is analyzed by district biologists.

In addition, turkey populations are estimated using sightings by wardens, biologists and other field personnel over a three month period. Efforts are also made to collect field information on wild turkey nesting sites and nest success throughout the



state. With the use of this information, biologists will be able to evaluate the effect of various timber management practices, especially as it affects nest site habitat.

In southwestern and northern Virginia, turkeys are trapped, tagged, banded and released. Hunters are offered rewards for returned bands and the resultant information gathered helps biologists to estimate hunting mortality and survival ratios, as well as the effects of "gobblers only" and "either sex" regulations on wild turkey population dynamics.

**GREATER SNOW GOOSE.** For the first time since the late 1930's, Virginia waterfowlers had a chance to bag a greater snow goose during the 1975-76 waterfowl season. Population studies showed that sufficient numbers of the big white goose were available, and possibly even an over-abundance for the habitat available.

As part of a number of migratory game investigations, a winter snow goose photo-census study was instituted to determine if high level photography is more efficient in counting snow geese in Virginia than the visual census technique currently used.

In cooperation with states from New Jersey to South Carolina, coastal goose populations will be counted and the results compared with the present visual census technique, in addition to the Quebec Wildlife Service's census and the estimated kill. If the study shows photo censusing to be more accurate and efficient, biologist will be able to discover quickly and population trends up or down, and thereby be better able to protect the resource.

**CLAPPER RAIL.** Yet another research project being conducted by Game Commission biologists is the clapper rail nesting study. On the sea side of Virginia's eastern shore, rail

Surveys were made this past season on the effect of hunting on snow geese. The 75-76 season was the first time the birds had been hunted in several years. Electronic tracking devices are commonly used to follow and record animals movements in the field. Riding an air boat through the marsh, scientists attempt to net rails for banding.

nests are located, marked, then visited weekly from April through June. Observers list the number of nests located and the number of eggs in each nest as well as keeping brood counts. Rail nests that are located are marked with tape or a painted pole so they may be more easily located. Information that is collected helps biologists in determining the peak nesting period of the clapper rail. In late summer, biologists and field personnel band adult and young adult birds in an effort to ultimately obtain more information through band returns by hunters.

**PHEASANT.** Game research people are also carrying out a pheasant transplant study. About 50 pheasants from established populations in northwest Virginia are trapped in February and March using welded wire traps with a single funnel entrance and plastic net or fish-net top. The birds are banded upon capture and released in areas of suitable habitat having little or no pheasant population. It is hoped that the already wild, established bird will be better able to reestablish itself than penraised birds.

These are just a few of the many research projects underway by game division biologists. Others include an important wildlife disease study; a game damage control study; studies to evaluate the status of Virginia's dove and woodcock; studies on foxes; ruffed grouse productivity and population trends; pheasant harvest and population trends; status of the raccoon; a fur harvest study; and a cooperative waterfowl banding program with other Atlantic flyway states and the U.S. Fish and Wildlife Service. Also, habitat management investigations are made as game biologists study aquatic vegetation trends on Back Bay; grouse-logging



*Fish culture jar is used to hatch fish eggs. Sometimes a close up view of the fish is necessary -- especially when they are as small as this young musky. Striped bass gets a tag--if he's caught, the tag will provide valuable information on this important sport fish.*



road relationship; acorn production studies; studies on wild grape production; and a cottontail feeding and nutrition study. This wide array of research projects is really still only a part of the overall picture. Biologists glean added knowledge and information aside from the main intent of the studies which always aids in the overall objective of protecting, and using wisely the wildlife resources of Virginia.

**TROUT STREAM CLASSIFICATION.** Among the more important research projects being undertaken by fish research biologists is a trout water classification and environmental inventory. Virginia's mountainous streams are being investigated to provide a reliable estimate of the number and types of trout streams; the miles of streams capable of supporting a trout stocking program but which are not currently utilized; and to provide environmental data for use in efforts to protect or minimize trout stream degradation.

Trout waters will be classified based on information gathered by two-man crews walking one or more miles of stream, and from supplementary information. These crews will gather information about stream

ownership, accessibility, air and water temperatures, number and size of pools and riffles, water flow, bottom types, relative amounts of siltation, color of the water, and types of land surrounding the stream. The trained eye of the biologists will also determine types of bank cover, fish cover in the stream, whether the stream has been channelized, stream widths and depths and with aid of a current meter, estimate the volumes of flow. Major water chemistry characteristics including total hardness, alkalinity, dissolved oxygen and pH, will also be studied.

In addition, fish populations will be sampled to determine the presence or absence of trout and to provide biologists with information as to what species do live in a given stream; which are dominant and which are secondary or incidental. Samples of all fish are preserved for species identification.

With all this information, the streams will be rated from A to D in categories such as aesthetics, productivity, fish populations and stream structure. Obviously, those streams with outstanding natural beauty and little or no land development, with good trout habitat and a good population of naturally repro-

ducing trout will carry the higher ratings. After this rating, the streams are classified. Wild streams which will basically be streams with naturally reproducing trout will be classed from I to IV, while trout-stocking streams--streams with adequate water quality to hold trout--will be classed from V to VIII. The remaining streams will be unclassed and unsuitable for any type of trout fishery for varying reasons.

A second phase of this study is the trout stream standing crop evaluations. Four-man crews are quantitatively estimating standing crops of fish and bottom fauna inhabiting selected trout streams. The third part of the study is the trout stream environmental data storage program. The purpose is to develop a computer program which would enable fish biologists to be able to quickly store all information gathered and, more importantly, to retrieve it when it is needed.

**STRIPED BASS.** Another important study underway is the Kerr Reservoir Striped Bass Population Study. The striped bass or rockfish has provided a valuable, though unmeasured, recreational and economical resource for Kerr Reservoir (Buggs Island Lake) and Virginia sport fishermen. Biologists of the

Right: Releasing brood fish, muskellunge at the Game Commission's Buller Hatchery. Far Right: Biologist taking eggs from muskellunge at Northern Virginia's Burke Lake.



Virginia Commission of Game and Inland Fisheries are concerned, however, because both the Staunton (Roanoke) and Dan River drainages which support the Kerr Reservoir spawning runs each spring are being eyed by private power interests and the Corps of Army Engineers as potential dam sites. The overall contribution each spawning river makes to the Kerr "striped" population is unknown. Construction and operation of one or more facilities on either river could alter spawning potentials and wipe out the Kerr striped bass populations.

The population studies will aid fisheries biologists in determining what impact these spawning activities have on the overall striped fishery in Kerr. This will be done by gathering yearly information on the striped bass population, age and sex composition indices, and to relate it to the spawning activities occurring in the Staunton and Dan Rivers. This information will help to adequately protect and manage the striped bass in Virginia.

In order to accomplish this, the study will be divided up into six jobs or phases. Biologists will have to first evaluate the spawning population by developing yearly adult striped bass population estimates, year class

strengths and sex ratios for the striped bass of Kerr including its spawning tributaries. They will also have to develop a means to estimate yearly reproduction and fishing pressure and harvest rates. Adult striped bass abundance and harvest estimates will be obtained by utilizing tag and recapture techniques, fin-clipping and gill-cover clipping. Biologists hope to tag or mark as many as 2,000 fish per year with location, date, release site, length, sex and scale data being recorded. Yearly reproduction estimates will be obtained through egg collections, river transport rate of eggs and surveying young-of-the-year. Most of the fishing pressure and harvest rates information will be obtained through aerial surveillance and creel surveys. Reservoir fish population studies as well as age and growth rate estimates through electro-fishing and rotenone sampling, will also be undertaken. These, briefly, are just a few of the activities necessary to complete the Kerr Reservoir striped bass study.

**LAKE STUDIES.** Kerr will not be the only lake hosting research teams of biologists. Virginia's newest large reservoir, Lake Anna, is the scene of another study as fisheries

biologists seek information as to Lake Anna's future as a sport fishery. Created by VEPSCO for the purpose of having an ample supply of coolant for its proposed nuclear power plant, its thermal patterns will be investigated, water chemistry surveyed, heavy metals content investigated and its plankton studied. In addition, its main source, the North Anna River will have its fishery studied.

Lake Chesdin will also be the object of a research study. Biologists will make a creel survey and fish populations study as well as a fisheries study of the Appomattox River. The biological, chemical and physical conditions of the lake--a limnological survey--will also be studied.

In Virginia's southwest, another team of research biologists will be studying the fish populations of Claytor Lake. Standing crops and relative abundance will be estimated; fishing pressure and harvest rates measured; age and growth studies made and physiochemical information gathered.

The results of these studies, when finally compiled will aid Game Commission fish biologists to better manage and protect Virginia's fisheries resources for the future.

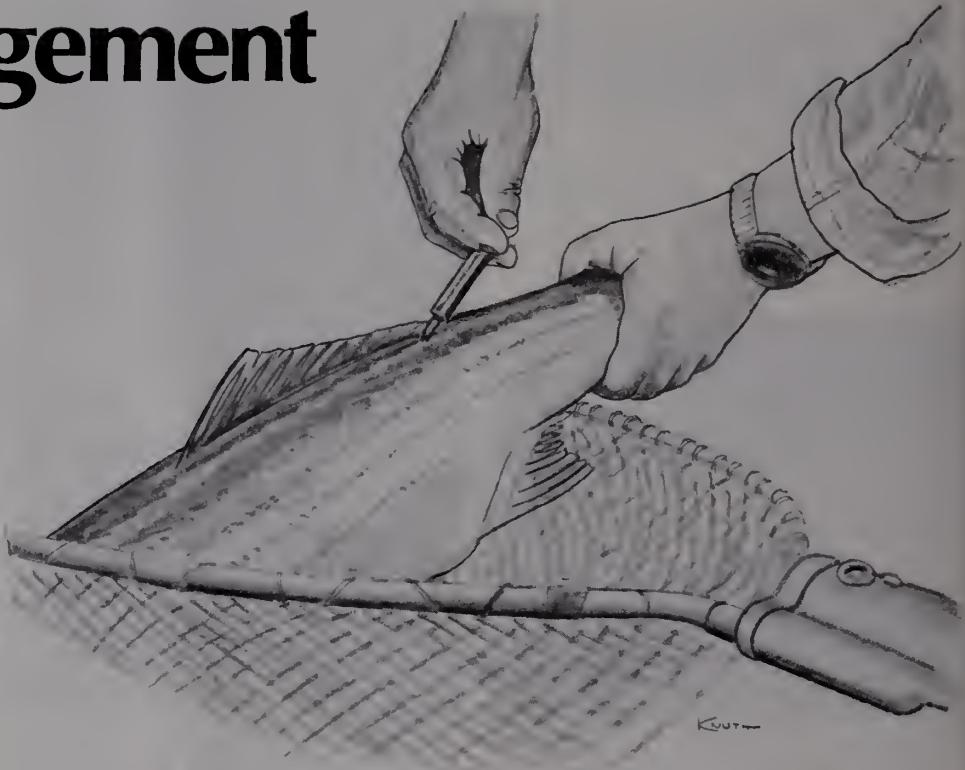
# Fish Management

By CARL "SPIKE" KNUTH

**TROUT.** Ice cold, clear water tumbles and splashes over and around rocks worn smooth by decades of rushing water. The surrounding woods are green with pine, oak, holly or maybe laurel, sprinkled with the blossoms of dogwood and redbud. You step carefully into the stream — hesitating only because you hate to disturb the sand and gravel beneath crystal clear waters. A few careful steps bring you within casting distance of a deep hole behind a large boulder. You just know there's a fair-sized trout feeding there, because you've taken many from the same hole in years past. A flick of the wrist sends your tiny artificial nymph into the current above the hole and is carried swiftly by curling waters past the boulder. Anxious fingers feel the line for a fish — to see if you've guessed right. A sharp tap on the tip of your limber fly rod tells you that you have as you set the hook into a fighting mountain trout.

Many anglers untiringly experience activities and feelings like these year after year. The time was when these trout were all natives — born and reared naturally in the stream. While most outdoorsmen dream that it could still be that way, it cannot. The majority of trout caught in Virginia's streams today are the result of a put-and-take program that was initiated by Gay W. Buller in the 1930's.

**THE FIRST** trout hatcheries were built at Marion, in Smyth county,



and at Montebello in Nelson county. These hatcheries were constructed in 1931 and consisted of one wooden building and forty-two 10 X 50-foot raceways at Marion, plus 22 raceways at Montebello. Raceways are simulated streams in which trout are reared. Continuing improvements have added new and better raceways, buildings and fish-handling equipment. The most recent of Virginia's trout hatcheries — more correctly called a rearing station — was Coursey Springs at Williamsville in Bath county. Put into operation in 1964, Coursey Springs has a capacity of 500,000 trout per year, as does Marion, while Montebello supports up to 40,000.

Each of the three trout facilities are fed by prodigious amounts of cold-water, mountain streams — a must for any successful cold-water fisheries program. It is at Marion where the life of a Virginia hatchery-reared trout begins. About two or three million eggs are stripped from brood fish annually. Eggs, fry and fingerlings are fed, transferred to their hatcheries and cared for by Game Commission fish culturists. After 15 to 18 months, most trout

have reached a size of nine inches or larger and are ready for stocking in Virginia lakes and streams that will support trout, but not trout reproduction. Nearly one million rainbow, brook and brown trout are raised to stocking size annually with some 150,000 going to Virginia's fee-fishing areas at Big Tumbling Creek, Douthat State Park Lake and soon another 50,000 to the Crooked Creek area when it is completed. The annual cost of this program is almost \$400,000, or 50 cents per trout which comes only from fishing license fees — much of it from special trout licenses.

**STRIPED BASS.** As we can see by the trout program, the hatching, rearing and stocking of fish is undoubtedly the most important function performed by the fish division of the Commission of Game and Inland Fisheries as it carries out its fisheries management responsibilities. Certainly the hatchery programs provide the most obvious and tangible results — witness the fact that Virginia lakes and streams are producing excellent trout, largemouth, catfish, crappie and brim

*Weighing fish that were previously stocked allows fish biologists to check their rate of growth. Below: Fish division worker shown fertilizing a pond.*



fishing — fish that were among the first species stocked as Virginia's freshwater acreages increased.

One of the more exciting warm water fisheries programs of recent years is Virginia's striped bass program. This program was born when these migrants from the sea became landlocked with the closing of the gates of the John H. Kerr Dam which formed Buggs Island Lake. The Staunton (Roanoke) River was to provide the "striped" with suitable spawning waters, making Buggs Island Lake the only Virginia lake — and one of a handful in the nation — with a self-sustaining population of these ocean transplants. Thousands of these landlocked "rockfish" weighing up to 35 pounds are annually drawn upstream through the currents of the Staunton each spring, often traveling as many as 80 miles. It is in the swift, upstream waters near Brookneal that the stripers come to deposit their floating eggs, and it is here that biologists and fish culturists of the fish division collect the stripers for their eggs and assure the future of this popular sportfish.

What had been a fisheries research

project has now burgeoned into a full-fledged warm-water fisheries management operation. At the Brookneal Striped Bass Hatchery, built with Virginia angler's license money, about 50 million striped bass eggs are taken annually. The scenic Staunton is the only river that provides the spawning stripers with the 45 to 60 miles of free-flowing water necessary to keep fertilized eggs suspended until hatching.

**EVEN BEFORE** the striped bass begins its spawning run, fish division personnel at the Brookneal Hatchery prepare special spawning tanks for the hundreds of fish that will utilize them, and as many rearing troughs for use by the hatched fry for the first few days of their lives.

When the run begins, adult spawning fish are captured by electro-fishing. A shocking device, mounted in a john boat stuns the fish, enabling the crew to net them, transfer them to a pick-up boat which transports the fish quickly to the hatchery. The females are injected with a hormone that induces spawning, then matched with others of similar egg development stage. Two females and

four males are placed in each tank and 30 to 35 hours later they begin to spawn. Once fertilization is assured, the adult fish are released back into the River. Another 30 hours later, the eggs hatch and a day or two later the tiny fry are siphoned into the rearing troughs where they remain for six days living off of their yolk sacs. From their sixth to their 10th days they are fed a brine shrimp culture, then released in Game Commission rearing ponds where they are raised to fingerling stage. Over 25 million fingerlings are raised, then stocked in some 15 Virginia lakes.

Not all striped bass fry end up in Virginia waters. Many fry are traded to other states or to the federal fisheries people in exchange for walleye, northern pike and occasionally muskies and trout which are then stocked in Virginia waters. In actuality, the present striped bass program supports a great portion of Virginia's warm-water fisheries program through this trading. In addition, up to 25 percent of the fry sent out are returned to be stocked in Virginia waters after being raised elsewhere to fingerling size.

The area of the Staunton River



*Eggs are taken from brood fish in hatchery ponds and raised to produce a million trout for anglers during the fishing season. Below: In the case of striped bass, electro-shocking must be used to collect adults ready to spawn, so eggs can be taken and hatched.*

critical to striped bass reproduction has been tentatively designated as a scenic river by the State Legislature. The successful Brookneal Stripper Hatchery Program plus the preservation of the stripers spawning habitat will assure the continuation of a fabulous fishing resource.

**MUSKELLUNGE.** Another giant that is beginning to provide some exciting fishing action is the muskellunge. The musky, generally regarded as a fish only of the north, once thrived in the Ohio River drainage. After being introduced into certain Virginia waters it is apparent that it can thrive here as well. After just a few years, Virginia muskies are pushing the 40-pound mark.

The musky rearing program, like the striped bass program, is just coming of age as it reaches the end of its experimental stage. Fish division biologists and fish culturists raise muskies by two different methods. Each spring, adult muskies are trapped from Lake Burke in Northern Virginia where eggs and milt are stripped from the fish, then shipped to the Front Royal Hatchery where they are hatched in about two weeks. The resulting fry are transported to the Buller Hatchery near Marion where they are raised to fingerling stage. At the Buller Hatchery, a second type of rearing program is undertaken. Adult brood fish are moved from their year-round brood pond into smaller rearing ponds where they spawn naturally. After being hatched the fry gather at one end of the ponds, as they are drawn down,



where they are carefully netted, then moved into rearing troughs with the fry from Front Royal, Lake Burke eggs. The fry are fed plankton which is also raised at the hatchery and when they reach the fingerling stage they are stocked in a number of Virginia lakes and reservoirs.

**FISH STOCKING.** The stocking of fish has long been one of the activities of the fish management program. But stocking isn't something done indiscriminately or on a whim. For example, one reason for fish stocking is to introduce new species of fish not already present. Another reason would be to stock new waters in an attempt to establish good populations of game fish. A third reason would be to strengthen game species populations in areas of known spawning failure. Often a pond or small lake needs to be

renovated, providing a fourth reason to stock. If a resident fish population is out of balance and must be removed, the pond or small lake can then be restocked with a proper ratio of pan-to-game fish. The fifth reason to stock fish would be in case of a total fish kill due to pollution when the total population has to be replaced.

Only a few of the numerous and varied jobs handled in Virginia's fish management program have been mentioned. Fish division personnel are also involved in fish population manipulation—the selective removal of unwanted fish, weed control, lake or pond fertilization and many others; all of this to provide a numerous but balanced variety of fish for the Virginia angler, and to maintain necessary and proper habitat to protect our valuable fisheries resource.



# Wildlife Management

By F. N. SATTERLEE

THE COMMONWEALTH of Virginia, encompassing twenty-six million one-hundred twenty-two thousand, eight hundred-eighty acres of land (nearly 41,000 square miles) of territory, is the 36th largest of the 50 United States. For nearly 350 miles Virginia shares a common border with North Carolina to the south. Within her confines, which stretch from the tidewater on the southeast to the Nation's Capitol on the north and thence southwestward along the Shenandoah Valley to the junction with Tennessee and West Virginia, there are some 18 MILLION fabulous acres which produce a unique and renewable resource. That resource is wildlife.

Management of this wildlife, on other than privately owned land, is largely the responsibility of the personnel assigned to the Game Division of the Commission of Game and Inland Fisheries. This responsibility, simply put, involves making the lands produce a sustained annual crop of wild game for recreational use through a regulated annual through the continued destruction

of vital habitat, galvanized them into harvest. To accomplish this prodigious task, only a handful of people (64 to be exact) are assigned to work under the direction of Richard H. Cross, Jr., Chief of the game division. From his office in the Commission's Headquarters located in Richmond, "Dick" and his secretary Marian Wooding manage and administer the workings and intricacies of the Division. In doing so, Cross is responsible for a widely diversified and highly skilled work-force including 18 biologists, 36 game managers, a forester and even a trapper, just to mention a few.

At this point, and with the foregoing as an overview, it is well to pause to look back into the origins of the game division and in doing so, fit it into the overall development of the Commission.

SHORTLY AFTER the turn of the century the uneasiness felt by sportsmen about the steady diminution of wildlife, both as a result of uncontrolled hunting and

of vital habitat, galvanized them into action. By 1916 these sportsmen had presented their case strongly enough to bring some results. That year the General Assembly created the Department of Game and Inland Fisheries, placed it under the jurisdiction of the Commission of Fisheries and assigned three people to staff the organization. In creating the new organization the General Assembly directed that funding of the operation would not involve any general tax monies, and to this date, the Game Commission has depended upon the sale of hunting and fishing licenses for its operating funds.

Elsewhere in this issue of *Virginia Wildlife* there are numerous references to the operation of the Game Division. Included in these accounts is a comprehensive dissertation on the scientific research projects currently underway. With that in mind, this section will be confined to the broader aspects of Game Management.

MANAGEMENT of the wide

variety of wildlife resources on the 18 million acres mentioned previously is complex, challenging, frustrating and yet fraught with promise. The challenge is obvious when the diversified ownership of these acres is studied. Of the total, approximately 200,000 acres are owned by the Department of Defense. This includes such military installations as Quantico Marine Base which encompasses some 50,000 acres in Stafford, Prince William and Fauquier counties; Fort A.P. Hill, with 77,000 acres near Bowling Green, Virginia, and the 45,198 - acre Fort Pickett just outside Blackstone, Virginia, plus a variety of smaller bases. Other Federal lands to be considered are the some 1,500,000 acres under the direct control of the United States Forest Service. Within this USFS jurisdiction are the well-known and heavily utilized Jefferson and George Washington National Forests.

On these Federal lands, the Virginia Commission of Game and

Inland Fisheries has ongoing cooperative agreements, involving management of the wildlife resource. To accomplish this, there is a constant involvement between the Commission's game biologists and their counterparts assigned to these establishments. It is to these lands that the general public, in pursuit of hunting and fishing and other outdoor activities, come in increasing numbers each year. These activities are admirably compatible and are encouraged within the scope and parameters dictated by the primary mission of the installation involved.

Supervising Game Biologist J. E. Thornton, writing in a recent article, explained cooperative management. "Cooperative wildlife management is based on the fact that wildlife belongs not to the individual who owns the land but to the Commonwealth, who holds it 'in trust' for the people of Virginia. This principle goes back to English Law and the Magna Charta of 1215. The land on which wildlife lives is, in most cases, in private ownership or owned by a public agency. This cooperative wildlife management has as its basic concept the principle that wildlife is a product of the land and that control of the harvest and of the environment or habitat are two major implements of wildlife management."

**COOPERATIVE MANAGEMENT** is also the manner in which the resource is managed on some of the nearly 1,400,000 acres of land owned by corporations within the Commonwealth. However, on these



lands ground management is handled largely by company personnel.

More than 40,000 acres of land are owned by the Virginia Division of Forestry. Some of this acreage is an integral part of about 250,000 acres on which the Commission of Game and Inland Fisheries manages the wildlife (for other owners) in return for hunting privileges and resulting benefits to sportsmen. Examples of this type of management include the Piedmont State Forests: Cumberland State Forest with 15,105 acres in Western Cumberland County, Appomattox, Buckingham State Forest with 18,534 acres in Appomattox and Buckingham Counties and Prince Edward State Forest located in Eastern Prince Edward County with 6,365 acres. Another outstanding example of cooperative management are the popular Philpott, Kerr and Flannagan Reservoirs owned by the U. S. Army Corps of Engineers.

In addition to the vast acres of lands managed cooperatively, the Game Commission has acquired



*Left: Through a progressive management plan, deer have been re-established in all but one of Virginia's counties. Trapping and transplanting nuisance bears eliminates problems and provides data on movements.*

*Right: Game Refuge Supervisor Granville Ross releases a banded rail bird to help gather management data. Ear protectors are necessary to shield him from noise from the air boat.*





*Left: Strategically located refuges and flocks of wing-clipped birds have helped establish large concentrations of Canada geese in Virginia. Cannon nets are an effective means of trapping and handling these birds.*

about 160,000 acres of land for public enjoyment of wildlife. These intensively managed areas range from waterfowl refuges to prime deer hunting territory. All are managed for optimum population of wildlife and are enjoyed by a wide variety of users. In managing large acreages methods and techniques must be used that are least expensive on a per acre basis. The game lands were purchased for the purpose of maximum game production. The objective of management plans is not primarily monetary return from the lands for income; rather, it is to produce and retain the best habitat for wildlife at minimum cost. The concept that timber cutting, rather than being an end in itself, can and must serve a larger purpose, complicates the planning and gives overriding importance to how the timber harvest is to be accomplished. Timber cannot be harvested without roads. Hunters follow roads, and increased deer harvests can be made by opening new country. At the same time, too much opening up of back

country can result in overshooting the wildlife. Waterfowl management is more expensive per acre than upland game management due to difficulty of controlling the environment, the need for special equipment which is not available on the commercial market, and the relatively small volume of marketable by-products (such as grain or timber) which result from waterfowl management.

IN ALL the management currently being conducted, the single most important source of wildlife is that which is produced and resides on private land. For it is on these some fifteen million acres of privately owned land that in excess 80 percent of all wildlife is found.

Since the Game Commission has no direct control over these lands, management is best accomplished through the regulatory process. This involves the establishment of seasons and bag limits for game species which are compatible with the recommendations of the biologists, given here. Included in these

the input from the sportsmen and women and the deliberations of the ten-member Commission. Wildlife is a crop produced by the soil and enhanced by management procedures just as is any other farm or forest crop. Except in very rare circumstances, production always exceeds the ability of the habitat to support the additional animals. Normally these succumb annually to disease, starvation, predators and exposure until the carrying capacity is again reached. By controlled hunting a portion of these animals can be safely harvested without any permanent effects on the wildlife community. These controls include length of season, restrictions on taking females and timing of seasons and opening days.

Coupled with the regulatory process the Game Division personnel constantly utilize the most modern management techniques available. Each of these methods is a comprehensive process and worthy of much more space and coverage than can be





*Students at Cedar Lane Elementary School in Fairfax County prepare part of the school playground for planting seed under the watchful eye of Game Warden Phil Parrish. More than 90,000 pounds of wild bird seed are produced each year by the Virginia Game Commission for use by landowners in establishing wildlife plantings. Both consumptive and non-consumptive game species alike benefit.*

techniques are the following which, it must be understood, are certainly not all inclusive.

**HABITAT MANIPULATION** involves not only scientific farming practices but includes the distribution of more than 90,000 pounds of Commission a produced wild bird seed. This seed along with suitable shrubs is given (free) to landowners for establishing wildlife plantings. All wildlife-game and non-game benefits from these plantings. Additionally the manipulation of habitat involves the creation of water holes (often using an innovative blasting technique) and prescribed burning.

Using proper timber cutting



operations an area can be kept in several stages of vegetative growth to encourage maximum numbers and kinds of wildlife. Deer and grouse benefit primarily from the younger age classes while turkey and squirrel benefit from the older. Thinning operations in a forest stand can be effectively used to increase the amount of food which can be utilized by wildlife. Thinning allows more sunlight to reach the forest floor, increasing production of herbaceous and other undergrowth vegetation used by numerous wildlife.

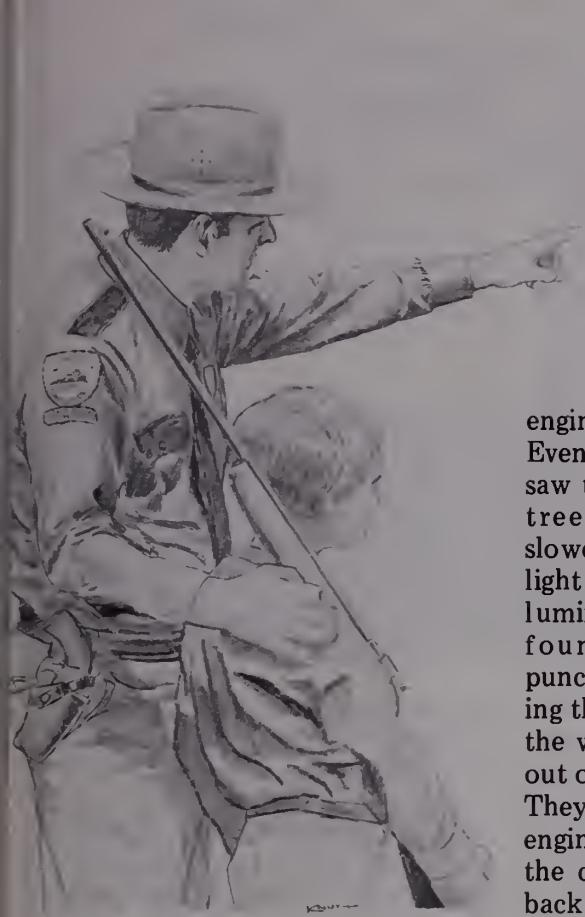
Other preferred food species include a wide variety of herbaceous plants, berries, and grasses. In developing habitat there must be cover as well as food. Rhododendron, laurel, pine, or brush thickets should be present. Also a average of two den trees per acre is recommended.

Wildlife can be produced along with agricultural crops, sometimes requiring only minor modifications in land use practices to provide for the needs of game species. Agricultural crops provide cover during the summer months, but this cover decreases with the harvest of the crops and disappears if the stubble is clipped or the fields plowed during

the fall months for spring seeding. A few rows left along the field edge provide important winter feed for wildlife. Fence rows allowed to grow up with native vegetation provide some of the best food and cover for wildlife as well as travel lanes where animals may move from one area to another without being exposed to predators. Mowing fallow or abandoned fields every two or three years will prevent the natural establishment of woody plants.

Continuing research to gain facts on which to base management decisions involves all game division personnel in one way or another. Most of these dedicated people wear several hats. Game inventory and census involves both surface and aerial observations, telemetry and more recently imagery available from high altitude photography and satellite scanning.

This then is a broad overview of the game management process in the Old Dominion. Through the application of sound judgment and with the understanding and support of the sportsmen and women of the Commonwealth there is now available in the fields and streams of this state more of this precious renewable resource called wildlife than in the days of the origin of this nation.



# Law Enforcement

By MEL WHITE

IT WAS QUIET in the grave yard, not even a breeze rustled the unkept grass around the ancient stones. To the two wardens parked on the old gravel path it seemed that not a thing had moved for hours except perhaps the low clouds that played tag with the stars. That wasn't quite true. On the other side of a thin line of trees half a dozen deer grazed in an open grassy field, and that's why the wardens were here at 1:30 a.m. on a November morning.

They had chosen their spot well — a not too traveled road through the woods with a big clearing frequented by deer — a spotlighter's paradise. The fact that some people like to ride along deserted roads shining lights on deer and then shooting them for "kicks" caused these two protectors of wildlife to be out on this lonesome vigil. And it seemed that this night watch would end as hundreds had before, with little more to show for it than fatigue and whatever satisfaction there is in trying.

The distinctive sound of a highly tuned and not too well muffled

engine fairly rattled off the trees. Even before they saw the car they saw the lights bouncing through the treetops — spotlights! The car slowed as it came to the field, spotlight searching out its prey. The luminous deer eyes glowed as it found its mark and three shots punctured the chill night air. Fighting the urge to be off in hot pursuit, the wardens held as the car sped on out of sight. But, not out of hearing. They listened as the sound of the engine faded and then increased as the car turned and began to come back to the scene of the crime. It came nonchalantly, slipping easily off onto the shoulder and stopping. Doors slammed and excited voices followed silhouettes out into the field. "How many we get?" Here's one!" "Only one? You couldn't hit the broad side of a barn!" "I'd got the other one, but the B----- ducked!" Laughter rings out as the three men returned to their car, leaving the deer to become a buzzard's breakfast.

Needless to say they were surprised to find two game wardens standing by their car. And, perhaps even more surprised later in court to find out how thoroughly the wardens had investigated the alleged violation, both before and after the incident.

WORKING AT NIGHT to apprehend poachers is only a small part of the Virginia game warden's activities. The night's work over, he is back, especially in hunting season, early the next morning. An individual warden may check hundreds of hunters on any given work day. He checks for proper license, firearms and ammunition, and often the

hunter's permission to be on the land he is hunting. Even though approximately 12,000 summons were written last year for hunting violations, the warden usually finds the vast majority of people he meets on his rounds to be both cooperative and law abiding. They are surprised sometimes, to find the game warden so far out in the woods away from the road. While these enforcement officers generally average 25,000 miles per year in their cars, they also wear out a lot of shoe leather. It has been this writer's personal experience that most wardens don't even think twice about striking out over the hill and down through a swamp to assure themselves that a shot just heard was fired by a properly licensed hunter. Virginia's fish and game law enforcement officers are more than license checkers; they are trained investigators. I learned this graphically one day last fall while

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*Looking over your shoulder for the game warden before you break the law is poor insurance against being caught by Virginia's alert officers.*





Game Warden W. R. Redford (left) checks a pair of young dove hunters for licenses, bag limits and properly plugged shotguns. As these boys were, most hunters the warden sees are law abiding sportsmen. Working on the water (below) is an important part of the warden's responsibilities. Wardens inspect boats for proper safety equipment as well as watch for reckless operation and overloading.

checking hunters with warden supervisor Joe Bellamy. We had taken a long walk through a typical oak-hickory woods, checking a number of hunters who were on stand waiting for deer to be driven their way. I had just finished checking a young hunter and moved on when Joe caught up with me.

"You missed something," he said. I couldn't think what it was, since the hunter had the proper license and his shotgun was correctly plugged. "What?" I asked. "There are a couple of blood spots on his pants cuff," Joe replied.

I went back with Joe and listened as the young man admitted that he had shot a deer from his stand earlier. The deer had been carried a few yards away, covered with leaves, and the hunter returned to his stand in hopes of illegally shooting a second deer. To Joe's keen eye, a couple of blotches of blood on a hunter's pants cuff told a tale that most people would have never seen.

**NOT ALL LAW VIOLATORS** confess on the scene, or in fact even act in a "normal" manner. Even though most sportsmen the warden meets are at least civil, he can't back away when he comes upon some that aren't. A crowd of drunken, surly roughnecks can't be passed by just because they might be dangerous. And dangerous it often is, especially

considering that a warden is most often alone. Though in radio contact, help, if needed, is usually long in coming — if indeed there is any to be had. The man who is patrolling a large area, and most do, is in the woods alone, on his own. Most wardens have encountered violators who were aware of this or just didn't care. More than one warden has been beaten, shot and left in the woods for dead. Even the simple act of serving a summons can be fraught with hazard. Recently a warden was asked to serve a summons on a man who was suspected of illegally trapping muskrats. The gentleman answered his door quietly, but when the warden stated his business, the man burst out of the house cursing and finally attacked the warden who was forced to subdue the man and take him away to the local lockup in handcuffs.

**SOME 300,000** fishing licenses were sold in Virginia last year and it is safe to say that most of these anglers enjoyed themselves on the fish-filled waters of the Commonwealth. A few thousand other people didn't bother to go down to the local agent and spend their five dollars. Many of these folks went down to see a local judge and paid several times the cost of the license after they were found with a fish in hand and no license in their pocket. Miles

of streams in Virginia's mountains are walked each year by wardens in their continuing effort to enforce the state's fish laws. Patrols are also accomplished by boat — sometimes a small john boat on a meandering tidewater river, or larger craft capable of the high speeds necessary to cover large areas on the state's several big lakes. The warden in his boat with its bright orange stripe and flashing blue light is also on the water for another purpose — your safety.





The Game Commission is charged with enforcing the boating laws in Virginia, and many of these, aside from registration and numbering, are designed with your well being in mind. Patrols are on the water daily to help make sure that necessary life saving equipment is on board, and that boats are not overloaded, or operated in an unsafe manner.

SOMETIMES the game warden's day on the water is less than pleasant. Searching for victims of boating accidents, drownings and other water mishaps is part of a warden's normal activities. When you have an accident with your boat on Virginia waters, the officer that comes to investigate is the local warden. Every boating accident in the state that involves property damage, personal injury or a fatality, is thoroughly investigated, and a detailed report is submitted to the Game Commission's Safety Officer.

The varied activities of the Game Commission's law enforcement division involving the game, fish and boat laws of the Commonwealth, and dealing with tens of thousands of people each year are accomplished by only 144 men. The law enforcement division is made up of a Chief, currently John H. McLaughlin, who is in overall command of the warden force, and two assistant chiefs, who share responsi-

bilities for administration, training, equipment, personnel placement and public relations. The state is divided into six game warden districts and a supervising warden has charge of each and is responsible for operations within his district. These districts also have two assistant supervisors, one charged with law enforcement activities and the other in charge of coordinating educational work within his territory. The "sergeants" in this small group of conservation officers are the area

leaders. These men are responsible for a geographic area usually encompassing four counties and are working leaders within this area. Individual wardens generally have one county as their work area, but are not completely restricted to its boundaries. Statewide however, one warden per county is the rule. In some areas where the job is far too large for one man, several wardens work in cooperation. Smith Mountain Lake is a good example. This huge body of water requires the

*Flying a small airplane (above) wardens are able to cover large areas quickly. Aircraft are also useful in search and rescue operations. New wardens (below) spend many hours in the classroom before they go afield and periodically return for additional instruction.*





An exotic snowy owl (above) about to be transferred to Richmond's Maymont Park by warden S. R. Stanford. Wardens (below) regularly appear in court.

service of men and their supervisors from half a dozen surrounding counties. Wardens from various areas also work cooperatively when large crowds of people will be concentrated in a relatively small area. The opening day of dove hunting is a good example, as is the trout opener when thousands of anglers descend on the state's trout streams.

**BUT OPENING DAY** comes once a year, and many people wonder just what a game warden does at other times, in the middle of winter for

instance. Considerable time is spent in what is lumped together under the heading of education. Law enforcement personnel are in constant demand as speakers for various civic clubs in their area as well as at meetings of local sportsmen's groups. Schools also take part of a warden's time. Talks on conservation, law enforcement, birds and animals are popular fare for school children in Virginia.

Another aspect of the game warden's education activities involves hunter safety training. Last

year Virginia's wardens trained over 25,000 persons in the safe use of firearms. Since the program began in 1961 some 167,078 persons have been through these training sessions. The programs are carried out in schools, hunt clubs, summer camps and other convenient meeting places during the year.

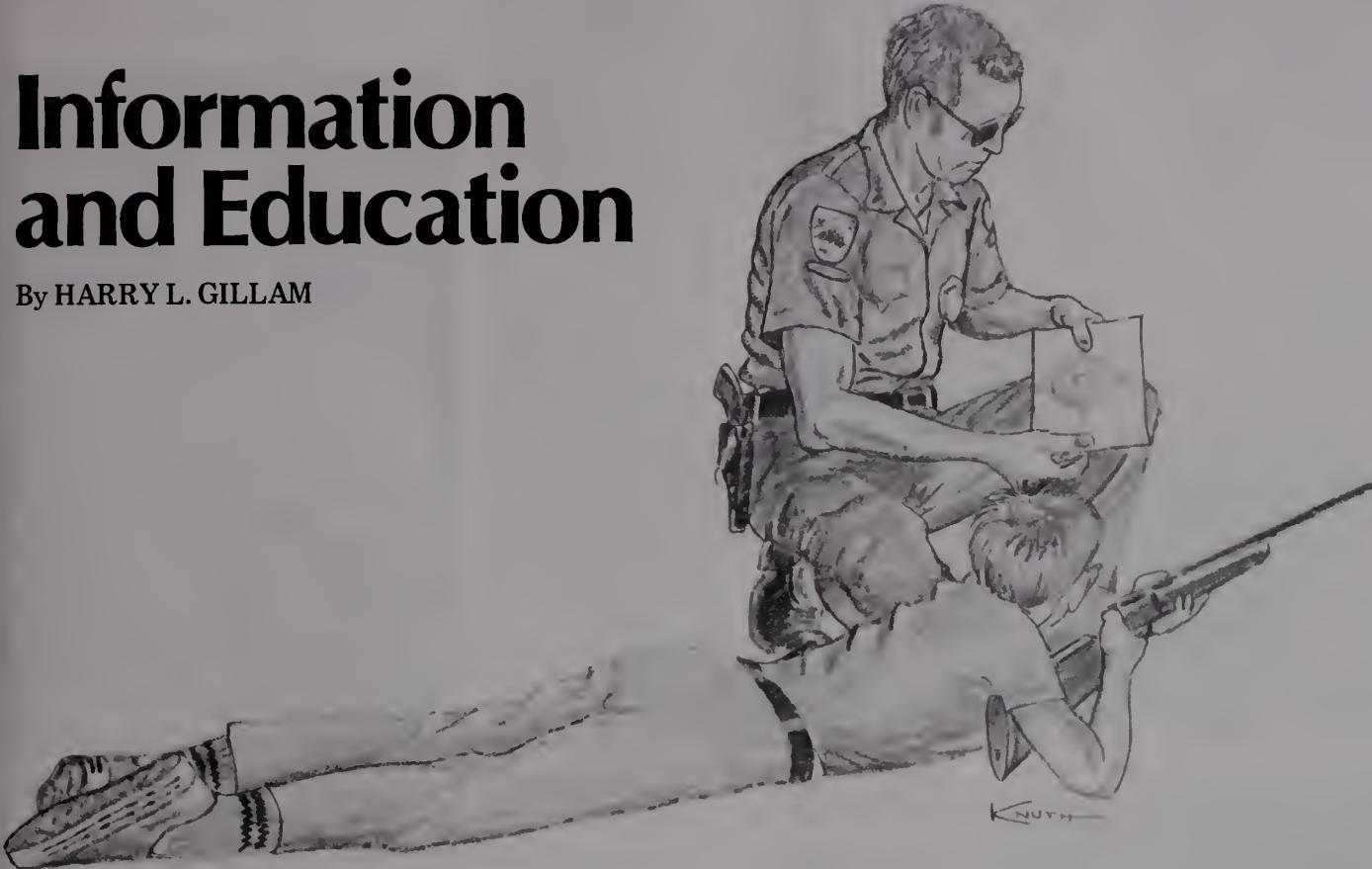
A look at the cover of this magazine will show you another important part of the law enforcement officer's job. In the scene a warden is assisting fish division hatchery workers in a fish stocking operation. Trout stocking often involves more manpower than is readily available from the fish cultural station, and the wardens are there when a hand is needed to handle the net. Assisting biologists from both the fish and game division are all in a day's work for a game warden. Law enforcement people also have been an invaluable asset for the education division. These past few months for instance, game wardens have been working along with audio-visual supervisor "Spike" Knuth in several movies now in production. In many cases they have made necessary arrangements, provided transportation and then served as actors as the cameras began to roll.

These are related activities however, and the warden is quick to remember that his prime objective is enforcement of the state's game, fish and boat laws. After a day of patrol on foot, by car, on a boat, or in the air, the warden often has his homework to do. It isn't simply a matter of "sneak up and gotcha!" The warden must present his evidence in court where everyone is presumed innocent. Consequently, game wardens carefully prepare their case for the several court appearances they make each week.

This kind of dedication is what makes a Virginia game warden. A man determined to do the best job possible — in spite of long hours, a sometimes thankless public, and no great reward. Nevertheless, he's out there in the field, protecting wildlife for all the citizens of Virginia.

# Information and Education

By HARRY L. GILLAM



"I just killed a cobra in my flower bed," the trembling voice on the phone said. "He reared right up with his head flattened and I chopped him in two with the hoe. I didn't know we had things like that in Virginia." A rather bizarre phone call but not all that unusual in the daily routine of the education division. It turned out that the excited caller's cobra was nothing more than a harmless hognose snake often called "puff adder." Snake calls are among the most common, but staff members assist in identifying birds, planning vacation trips and even settling bets involving odd bits of natural history information. Communications is the business of the education division and all channels are utilized to deliver the Commission's message.

**VIRGINIA WILDLIFE.** Except perhaps for the basic hunting and fishing regulation folders, more people know the Game Commission through the pages of *Virginia Wildlife* magazine than in any other way. *Virginia Wildlife* requires about one-third of the Division's nearly half-million dollar budget, but about 80

percent of this is recovered through subscription fees. The magazine covers all phases of outdoor recreation and enjoyment with emphasis on hunting, fishing and natural history. Artists and writers deluge the editor's office with far more material than can be used but this is healthy since only the best can be selected for the magazine's pages. The recent change to a 36 page format will mean more information packed into each issue. The number of subscribers has hovered around 50,000 for the past several years.

**PUBLICATIONS.** With nearly 80 titles on stockroom shelves, publications form a large part of the Game Commission's information and education program. The basic game and fish regulation folders which are distributed in quantities of more than half a million each are the largest item. Specialized folders with dove regulations and waterfowl seasons provide last minute additional information.

Maps of lakes and management areas are also popular with sportsmen and others who enjoy these

facilities. School children, scouts and teachers are the main customers for the 180,000 plus copies of natural history publications distributed each year. These cover subjects ranging from animal tracks to endangered species to snake identification. Providing accurate, attractively packaged and useful information to young people is a major education division goal.

**FILM.** The education division's film library with more than 100 prints of some 70 different films provides wildlife programs for some 100,000 people each year. Wardens use the films in schools, for hunter safety courses and at sportsmen's clubs. Sportsmen, civic and youth groups plus many schools obtain the 16mm sound-color features themselves for programs. If you attend one of the evening visitor programs in Virginia State Parks you may see some of these interesting wildlife films.

Most of the films in the Game Commission library have been purchased from out-of-state producers. At present several Game Com-



*Top Left: Diane Grant puts the finishing touches on one of 2,000 citations for trophy fish issued each year through the Game Commission's information office. Top Right: Popularity of the new Home Study Boating Safety Course has kept safety secretary Jackie Brooks busy filling orders. Above: Clara Hall, film librarian, handles nearly 2,000 requests for films each year, serving an audience of over 100,000 persons.*

mission produced films are nearing completion. The first of these will be on the Staunton River, featuring the striped bass fishery. Another will document the Game Commission's successful rearing and stocking program which has brought trophy muskies to many of the state's waters. Virginia's trout program will be the subject of a third feature. It will cover the life cycle of the trout from egg to release with some exciting underwater scenes taken in actual Virginia trout streams.

**NEWS SERVICE.** Getting out the word on Commission activities and regulations is the continuing job of the news and information section. Weekly press releases go to newspapers, wire services and some broadcasters. In addition a news-phone service used largely by radio stations provides current news and fishing information. Publicity campaigns like Safe Boating Week, National Hunting and Fishing Day, and Wildlife Week are coordinated through this office.

Virginia wildlife trophy fish citations are popular with anglers who claim more than two thousand of these angling achievement awards annually. The attractive new plaques with colored three dimensional



fishes should make these awards even more eagerly sought. Records from the program have been useful to fishery biologists and have helped earn the state proper respect in freshwater fishing circles.

**BOATING SAFETY.** Boating in Virginia is without question the fastest growing recreational activity. Each year more and more families are taking to Virginia waters and to date there are 138,726 registered boats in the state.

During the last fiscal year the game warden force operated 149,376 miles by boat spending 27,786 hours in boat patrol and issued 2015 citations for boating violations. Of these 743 were issued for not having the required number of approved personal flotation devices on board.

Education is the answer to this problem and 5000 copies of the home study course entitled "Virginia Better Boating, A Guide to Safety Afloat" have been distributed to interested boaters. The course of twenty-one chapters covers boat classifications, watercraft to include sailboats, hull design, motors, equipment, trailering, operation, preparation, rules of the road, navigational aids, compass, locks and

dams, weather, knots, mooring, water sports, accidents, first aid and skipper's duties. Six boaters can study out of the same book and take the examination. Boaters who complete the course are furnished a certificate and ID card for these efforts. The course costs \$1.00.

In addition, the Game Commission has furnished all radio and TV stations with boating safety spots. Listen to your AM radio on the way to the launching site for these timely and informational spots.

The placement of regulatory markers, an important service to boaters using inland waters, is coordinated and controlled by the safety section. Proper installation and maintenance of these navigation aids is important since boaters rely on them for safe passage. Some 420 are now in place and many more sites are currently under investigation.

Boaters who are interested in taking a formal class in safe boating should contact the U. S. Power Squadron or U. S. Coast Guard Auxiliary for details.

Boating is a friendly sport but courtesy and common sense when afloat are necessary to keep it enjoyable.

**HUNTER EDUCATION.** Since October 1961, the Virginia Commission of Game and Inland Fisheries has conducted a volunteer hunter safety program in cooperation with the National Rifle Association. This was necessary because population changes and urbanization had spawned a new type of hunter.

Since the inception of the program, 167,078 "safe hunters" have been certified. During the 1974-75 year alone 30,939 students were certified. To date 679 volunteer instructors, 150 of which are Game Commission personnel, are active instructors.

The six hour course covers hunting traditions and ethics, equipment and shooting basics, game identification and hunting techniques, plus

the hunter's responsibility. The program is now active in all counties within the state and in most counties has been introduced into the schools between the eighth and twelfth grades. The acceptance of the program and its incorporation as an integral part of the health curriculum of the State Department of Education has done a great deal to make hunter safety training widely available in schools.

Educational programs have been conducted through the medium of educational television. A Virginia Hunter Safety Home Study Course was developed to assure every hunter, young or old, in the state, the opportunity to enhance their knowledge of safe gun handling, conservation and good sportsmanship. The chiefs of police of many cities have endorsed the Virginia Education Program along with the Boy

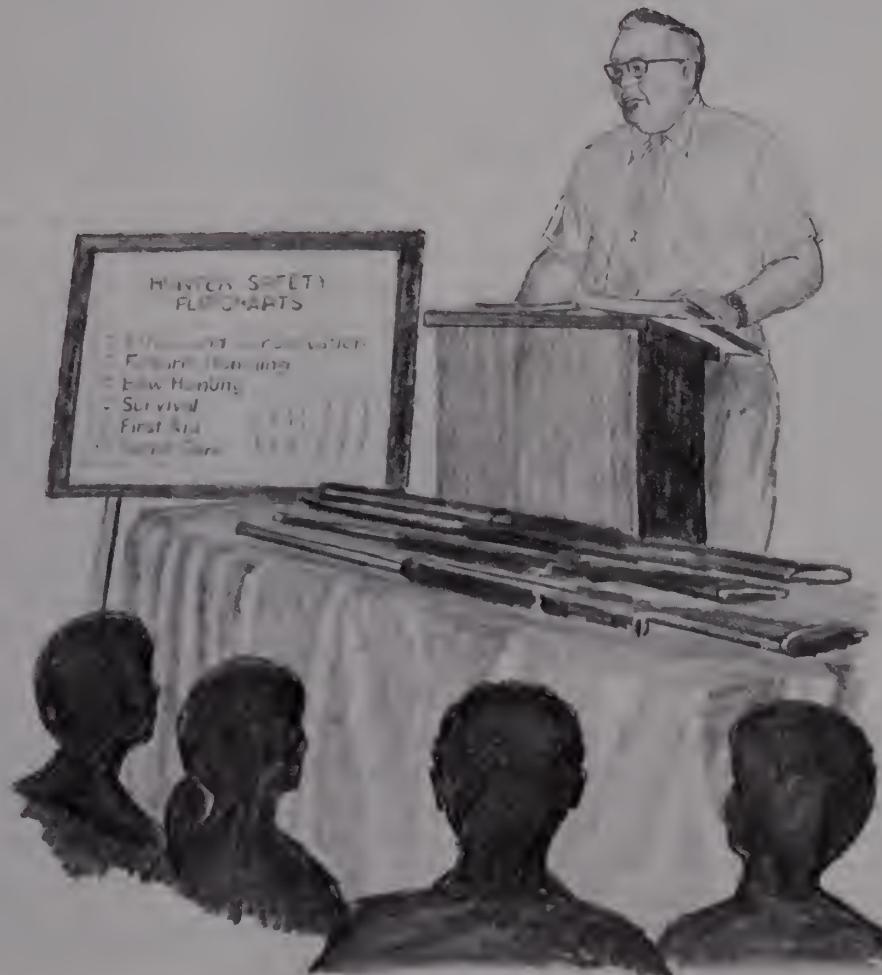
Scouts of America, 4-H Centers and American Red Cross.

There is no charge for instructor or student material; except a nominal fee of twenty-five cents to cover the cost of the student hunter safety patch if included.

Federal funds from excise taxes on pistols and bows and arrows are used to fund hunter safety programs in many states. Due largely to the increased accounting involved, Virginia has chosen to fund and execute its own state program using the federal monies instead in its Game Management Program. Virginia's Hunter Education Program is fully on par with programs in other states and graduates carry equal credentials. Virginia's program is above average in all respects, ranking in the top third.

Twenty-two states have mandatory programs in which hunters must

*Over 30,000 students graduate each year from the Game Commission's hunter safety program, placing it among the top programs in the nation.*





show a standard hunter safety course completion card before obtaining a hunting license. Virginia's accident rate is slightly over half the national average while its voluntary program trains at least 50 percent of those who would seek such training. At current growth rates the Commission program should be available to all who want it by 1980.

The fiscal year 1974-75 showed a decline in the number of reported hunting accidents and hunting fatalities and our aim is to see this trend continue.

Anyone interested in the Virginia Hunter Education Program should contact their local game warden or write to the Safety Officer, Virginia Commission of Game and Inland Fisheries, P.O. Box 11104, Richmond, Virginia 23230.

It's better to hunt with your boy or girl today than to hunt for them tomorrow.

**PROGRAMS.** The education division's limited staff handles more than 50 programs for groups such as garden clubs, sportsmen's groups, civic clubs, scouts, church groups and schools each year. School wildlife programs and career day events are becoming increasingly popular.

A new series of slide programs has been completed to complement the film loan service. These have been supplied to Game Commission personnel and most are available on loan to groups.

The Education Division's work is often hectic but never dull. The changing seasons bring changing demands. The busiest seasons are just before the spring fishing season and just before hunting season. Once

the seasons actually begin apparently everyone is out there taking advantage of Virginia's productive outdoors and doesn't have time to write or call.

New emphasis on programs and study aids for school children and teachers should help round out the Commission's education program. Only environmentally-aware future generations can preserve the outdoors we now enjoy.

*Above: The pages of Virginia Wildlife roll out of automated typesetting equipment under the skilled guidance of cold-type compositor, Jo Ann Moss. Below: Wildlife programs are popular with groups young and old.*



# Administrative Services

By H. L. GILLAM

"Efficiency" is the byword of the Game Commission's administrative services division which is responsible for keeping track of the nearly \$10 million that passes in and out of Game Commission coffers each year. "We are proud that we have been able to handle this ever growing job with a minimum increase in personnel and overhead," says Division Chief Sam Putt. The trend has been toward streamlined accounting procedures, more sophisticated accounting machines and increased use of automated data processing.

**BUDGET.** The Game Commission's budget for the 1976-78 fiscal year is the largest ever in terms of total dollars. Some \$6.5 million per year is budgeted for maintenance and operation expenses plus an additional \$3.3 million each year for capital improvements. About 65 percent of the operations budget goes for salaries and related expenses such as insurance and retirement contributions. The remaining 35 percent covers vehicles, uniforms, equipment, supplies and travel funds for the Game Commission's nearly 450 employees. Capital outlay expenses are for land, construction and buildings.

About 75 percent of the Game Commission's money comes from license sales. The remainder is largely matching federal grant money plus a small amount from timber sales and leases on Game Commission lands (some properties the Game Commission has acquired came with



built-in leases as a condition of sale.) No general tax revenues are used in funding the Game Commission's programs.

A detailed budget is prepared by the administrative services division with input from each of the other divisions and is presented to the State Budget Division, the Governor, and then the General Assembly's Appropriations Committees. Even though Game Commission revenue is deposited in the Special Game Protection Fund earmarked only for use by the Game Commission, it can only spend that portion appropriated each year.

One of the newest innovations in the Commission's fiscal accounting section is an IBM 3741 mini computer. It keeps track of the Commission's approximately 10,000

individual business transactions annually and charges them against the appropriate division's budget. Each month an accounting report is generated with that month's transactions and a cumulative total. "In addition to its ability to calculate with electronic speed it's quiet," says Sam Putt who recalls the noisy mechanical machines of the past which disturbed employees two offices away.

**LICENSE ACCOUNTS.** Keeping track of almost two million transactions handled by some 480 separate agents is the task of the license accounting section. During the 1974-75 license year 357,192 resident hunting licenses and 325,683 resident fishing licenses were sold. Agents must be supplied

## LICENSE SALES - 1974-75 FISCAL YEAR

License Type	License Fee	Number Sold	Amount
Resident Hunting	\$ 5.00	357,192	\$1,785,960.00
Non-Resident Hunting	20.00	21,764	435,280.00
Resident D.B.T.	5.00	279,970	1,399,850.00
Non Resident D.B.T.	20.00	15,814	316,280.00
City/Co. Hunt/Fish	5.00	41,158	205,790.00
Trapping-County	5.00	1,673	8,365.00
State	15.00	707	10,605.00
5 Day Fish	3.00	63,997	191,991.00
Resident Fish	5.00	325,683	1,628,415.00
Non Resident Fish	10.00	7,965	79,650.00
Resident Trout	3.00	97,867	293,601.00
Non Resident Trout	7.50	2,432	18,240.00
Dip Net	2.00	17,717	35,434.00
National Forest	1.00	171,852	171,852.00



*Data Processing, under the supervision of Jack Cox, is a means of keeping up with thousands of registered boaters and Virginia Wildlife Subscribers.*

with 2.5 million license forms so that most will have a supply of each of the 15 types the public may ask for. For their services agents receive about \$300,000 per year in fees.

License agents are appointed sparingly on the basis of need, since it costs the Game Commission about \$100 per year in added administrative costs for each new agent. Also, as numbers of agents increase, profits per agent decrease making more overhead for all concerned. In most counties agencies must be approved by the County Clerk. The location, hours, type of business and public need are all taken into account in considering new agents. An economy in time and money for both the Game Commission and agents will be realized July 1 when a blanket bonding program for agents goes into effect. Previously each agent had to be bonded individually, which consumed a great deal of clerical employee time.

**PERSONNEL.** The personnel section is responsible for maintaining payroll, leave and retirement records on the Game Commission's 310 salaried and 140 hourly personnel. Employee and workmen's compensation insurance records are also

handled in this one-person department. Recent changes in position employment procedures have vastly complicated the process of hiring new employees.

**FEDERAL AID.** The Game Commission participates in four or more Federal Aid Programs, the most important of which are the Dingell-Johnson (fishing tackle) and Pittman-Robertson (guns, bows and ammo) excise tax funds which are expected to net Virginia more than one million dollars per year during this biennium. These funds are used for research and for land acquisition and development when matched with 25 percent state money. Also involved on some general recreation projects are Land and Water Conservation funds (administered through the Commission of Outdoor Recreation) and Federal Boating Safety funds. Much of the actual management of these funds at the state level has been shifted in recent years from the federal government to the participating states. This, plus increasingly complex federal requirements for project statements, progress reports and assurances of compliance with federal guidelines, has necessitated establishing a per-

manent Federal Aid Coordinator DATA PROCESSING. The data processing section handles much of the routine listing and tabulating work with automatic machinery. The largest volume is the list of registered motorboats. The section also maintains the *Virginia Wildlife* mailing list of 50,000 subscribers. Subscribers' accounts must be updated to reflect new subscriptions and mailing labels prepared each month. Other external and internal mailing lists are maintained here as well.

**MOTORBOAT REGISTRATION.** At present 142,000 motorboats are registered in Virginia, about half of which are traded, sold or otherwise expire each year. Most of these transactions occur between April and September making an extremely seasonal workload for the Commission's boat section. All transactions must pass through the 4010 West Broad Street Office in Richmond although many boat dealers have joined the "Prepaid System" which allows them to pay in advance for registration numbers and when a boat is sold the

## Maintenance and Operation Expenditures by Function Projected for 1976-1977

### ADMINISTRATION

LAW  
ENFORCEMENT  
36%

8%

7%

FISH  
31%

### EDUCATION

## REVENUES BY SOURCE



SOURCE: 1976-77 REVENUE ESTIMATES

These charts illustrate the basic expenditure and funding allotments for Game Commission programs.

Richmond office is called and a number is issued over the telephone to the dealer. Thus they merely transfer them to the purchaser, allowing him to launch immediately. Boaters are notified every three years when their registration is about to expire.

Boat funds are used for law enforcement, education and boat ramp construction in addition to paying the administrative overhead connected with processing and issuing registration certificates.

**BUILDING AND GROUNDS MAINTENANCE.** Just keeping up the 44,000 square foot office building on West Broad Street is a large order. Janitorial services are handled on contract with a private firm as are grounds maintenance. Then there is the heating and air conditioning system, the phone system, a paging system to maintain, plus emergency repairs to electrical and plumbing systems. Draperies and blinds have to be cleaned, windows washed, and adjustments made in wiring, partitions and lighting to accommodate new machines and new operations.

Administrative services also handles all mail, in-house printing and rotation of stock. The loading

dock at 4010 West Broad is a busy place with several trucks unloading each day and several game wardens taking on supplies in between.

"Most organizations equate growth with progress," Sam Putt says, "but in our case growth represents undesirable increases in overhead expenses, which we try to

avoid." Our division does the entire job with 25 people which is probably a smaller staff than in any other state of comparable size east of the Mississippi." Certainly the administrative services division provides a vital center to the complicated web of Game Commission activities.

*Janet Brackett, Boat Records Supervisor, tracks down an elusive boat registration.*



# A Commissioner Views His Job

By JACK RANDOLPH



My first act as a Game Commissioner was to hit a rabbit with my car on the way home from the swearing in ceremony. I must confess that I had hoped to start out on a more positive note.

There was a time that I covered Commission meetings as an outdoor writer. I was soon to discover, however, that there's a whale of a lot of difference between sitting out in the audience and sitting behind the big table up front. Both writers and commissioners are responsible to the public, but as a commissioner that sense of responsibility is somehow more powerful.

My background as an outdoor writer gave me a leg up when I was appointed to the Commission. I already had a fair knowledge of how the Commission operated and I was very impressed with its fine record of solid accomplishments. My military career had taken me to many corners

of the United States and overseas. I had seen many wildlife agencies at work and had been a part of a few. Over the years I had recognized our Virginia Commission as second to none and I knew that as a member I had something to look up to.

Anyone who has served on committees or commissions knows that it's very difficult to please everyone, but that doesn't stop us from trying. With regard to fish and game I see my responsibility, primarily, to ensure that we only hunt and catch the harvestable surplus of our fish and game. Every decision must be for the enhancement of our wildlife. When seasons and bag limits are set we must be certain that we will take only the numbers that can be taken without hurting seed stock.

In Virginia our sportsmen are outstanding in recognizing the need to preserve certain species. Seldom do we hear a gripe when we shorten a

season or lower a bag limit if we made the reasons for this action well known. Things don't get sticky until we decide how to apportion the available fish and game among sportsmen.

The most difficult aspect of setting regulations is coping with the special interests among sportsmen. These include sportsmen who hunt with dogs and without; bowhunters, muzzleloaders, falconers and others. Among fishermen we have fly purists and bait fishermen and among waterfowlers we have tidewater hunters, inland hunters and the special geographical conditions unique to Back Bay and the Eastern Shore.

Once a biologist remarked that wildlife management was easy, but it is people management that is difficult. Of course, we can't manage people, nor can we please everyone.

One question that constantly comes to mind is, "what is the value



of the hunt? Is it the game we bag or is it the hours we spend pursuing it?"

If the game is all that matters we should have no trouble setting seasons. But if the hunt is the important thing we have to ask ourselves some important questions. If, for example, we have a harvestable surplus of X animals should we allow them to be bagged as targets of opportunity by someone hunting another species or should we set a separate season so that hunters who specialize in hunting species X can have more fun afield?

As a Commissioner I have many areas of concern. The kepone problem in the areas of the James of interest to our Commission is of great interest to me. It is a helpless feeling to see the white perch and the striped bass disappear from the rivers and creeks. It is equally frustrating to see our licensed anglers barred from the best largemouth bass and

crappie fishing in the Old Dominion because of the careless handling of pesticides.

Game violations continue to be of concern. It is pathetic to hear that wildlife is being stolen from the law abiding sportsmen by a selfish and unthinking few. Of greater concern is the poor image a small segment of the hunting and fishing population portrays to the general public.

Of course, we can point with pride to the success of our deer herds, our turkey flocks and the landlocked striped bass fisheries that have been established. We can also take great pride in the 160,000 acres of Commission-owned land that provides food and cover for countless game and non-game species. In addition to game our management areas offer prime habitat to many small mammals, reptiles and song birds. We would all like to see the non-hunting and fishing public take note

of this gift given all wildlife by the sportsmen of the Old Dominion.

The administration of the funds is a serious matter. Our Commission is entirely funded by the sportsmen of Virginia through license fees and matching funds provided by the Federal Government from excise taxes on hunting and fishing gear. No tax dollars are contributed to the welfare of wildlife nor are the fines collected for fish and game violations channelled back to the Commission. Fines are given to the State Literary Fund. In any case, we do the best we can to see that we get the most for our money.

One of the rewards of serving on the Commission is the opportunity to work with our fellow Commissioners and the outstanding professional staff that make the wheels turn. And we do have a truly outstanding staff, second to none in the world.

# Virginia Game Warden Directory

Accomack	Danny E. Marshall, Temperanceville 23442 Phone (804) 824-5566	Clarke	Charles R. Gemmell, P.O. Box 103, Berryville 22611 — Phone (703) 955-1132
Albemarle	*C. R. Walker, Rt. 6, Box 258, Charlottesville 22901 — Phone (804) 293-6243	Craig	J. R. Owings, General Delivery, New Castle 24127
Alleghany	F. W. Hanks, P.O. Box 362 Covington 24426 — Phone 962-5928	Culpeper	Lee Harold Haupt, Box 18, Boston 22713 Phone (703) — 937-5222
Amelia	*J. E. Allen, Box 73, Amelia 23002 Phone — 561-2654	Cumberland	*Jacob T. Newman, Cumberland 23040 Phone — (804) 492-4515
	Charles D. Ingram, Rt. 3, Box 134, Amelia 23002	Dickenson	*Otto D. Kendrick, Rt. 3, Box 189 Clintwood 24228 — Phone 926-6474
Amherst	Bobby J. Boudurant, Rt. 3, Box 23F1, Amherst 24521 — Phone 946-7603	Dinwiddie	Michael A. Wolford, Rt. 1, Box 273, Haysi 24256 — Phone (703) 865-4323
Appomattox	*Charles D. Torrence, RFD 2, Appomattox 24522 — Phone (804) 352-5469	Essex	Brian S. Viel, Rt. 1, Box 17-B, Church Rd. 23833 — Phone (804) 265-5848
Augusta	Norman O. Cole, 607 Oak Lane, Waynesboro 22980 — Phone 942-6922	Fairfax	Riston C. Hutchinson, Jr., Box 204
	Jerry W. Dove, Rt. 1, Box 57 Churchville 24421 — Phone 886-8608	Fauquier	Tappahannock 22560 — Phone (804) 443-2110
Bath	Kenneth R. Sexton, Box 211, Warm Springs 24484 — Phone (703) 839-2189		P. S. Parrish, Rt. 2, Box 50, Remington 22734 — Phone (703) 439-3516
	*William B. Tuttle, Rt. 1, Box 36A, Millboro 24460 — Phone 997-5653	Floyd	Dwight G. Campbell, Rt. 2, Box 41BB, The Plains 22171 — Phone (703) 347-1639
Bedford	W. W. Shields, 829 Ole Turnpike Drive, Bedford 24523 — Phone 586-3135	Fluvanna	*Gordon A. Wilkes, Blue Ridge Ave., Warrenton 22186 — Phone 347-1299
	William Elwood Wilmoth, P.O. Box 476, Moneta 24121 — Phone (703) 297-5432	Franklin	J. W. West, Rt. 2, Box 12, Floyd 24091 — Phone 745-4231
Bland	W. Wayne Richardson, Bland 24315 Phone (703) 688-3535		Lester Lee Humphreys, Rt. 2, Box 61R Palmyra 22963 — Phone (804) 589-8352
Botetourt	D. F. Millins, Rt. 2, Buchanan 24066 Phone 254-2798	Frederick	Edward W. Demsey, Rt. 1, Rocky Mt. 24151 Phone 483-0350
Brunswick	Kevin C. Clarke, 901 1st Ave., Lawrenceville 23868 — Phone (804) 848-4496	Giles	Karl Patrick Martin, P.O. Box 193, Rocky Mt. 24151 — Phone 576-2708
Buchanan	Tony D. Urbani, Rt. 1, Vansant 24656 *Ted Ward, Pilgrim Knob 24634 Phone 259-7224	Gloucester	David R. Ramsey, 811 Berryville Ave., Winchester 22601 — Phone 662-2839
Buckingham	Douglas E. Blosser, Dillwyn 23936 Phone (804) 983-3115	Goochland	Stephen T. Vinson, 411 Gale Rdl, Pearisburg 24134 — Phone 921-2762
	William Kidd, Rt. 1, Box 287, Buckingham 23921	Greene	Richard C. Loving, P.O. Box 733, Gloucester 23061 — Phone (804) 693-4872
Campbell	R. B. Blanks, Rt. 1, Box 154-B Evington 24550 — Phone (804) 237-3485	Grayson	James Spencer Winn, Box 27A, Maidens 23102 — Phone (804) 556-4210
	Edd B. Jennings, Rt. 1, Box 119B, Evington 24550		B. D. Hackworth, Rt. 1, Box 46-B, Stanardsville 22973 — Phone 985-7840
Caroline	Joseph D. Dedrick, Rt. 3, Box 91, Ruther Glen 22546 — Phone (804) 448-3966	Greenville	*M. Page Clark, Independence 24348 Phone — 773-6312
Carroll	Charles R. Chappell, P.O. Box 741 Galax 24333 — Phone (804) 236-3834	Halifax	Robert T. Greear, Rt. 1, Box 49, Independence 24348
Charles City	Donald L. Montgomery, Rt. 6, Box 226 Richmond 23231 — Phone (804) 795-2329		*Cato L. Collins, Box 24, Star Route, Emporia 23847 — Phone (804) 634-4370
Charlotte	John L. Elgin, Rt. 1, P.O. Box 268, Charlotte C.H. 23923 — Phone (804) 542-5038	Hanover	*Ralph E. Austin, Clover 24534 Phone (804) 454-3434
Chesterfield	*M. R. Johnson, Michael R. Minarik, 9015 Forest Hill Ave., Richmond 23235 — Phone (804) 320-4326	Henrico	A. E. Cole, RFD 2, South Boston 24592 Phone (804) 575-7593
		Henry	*W. R. Redford, P.O. Box 2, Hanover 23069 — Phone (804) 746-8117
			J. J. Westbrook, Rt. 2, Box 148, Sandston 23150 — Phone (804) 737-2115
			Rex W. Crawford, Rt. 5, Hillcrest Park, Bassett 24055 — Phone 629-2443

Highland	Elmer R. Arrington, P.O. Box 41 Monterey 24465 — Phone 468-2732	Prince William	John W. Berry, Jr., 14513 Hamowell St., Manassas 22110 — Phone (703) 791-3667
Isle of Wight	Harry E. Kingery, P.O. Box 103, Isle of Wight 23397 — Phone (804) 357-5502	Pulaski	Kenneth W. Dudley, 4600 Newbern Hgts. Pulaski 24301 — Phone (703) 980-4288
James City	*Walter E. Eggleston, 400 Hubbard La. Williamsburg 23185 — Phone (804) 229-9367	Rappahannock	Donald A. McLeod, Box 398, Dublin 24084 Phone (703) 674-5304
King George	Lawrence R. Buchanan, P.O. Box 215, King George 22485 — Phone (703) 775-7127	Richmond	James M. Bankston, General Delivery, Woodville 22749 — Phone (703) 987-8771
King & Queen	C. T. Bland, Shanghai 23158 Phone — (804) 785-4758	Roanoke	*H. H. Pittman, Jr., Regina 22540 Phone 435-4221
King William	G. H. Meredith, King William 23086 Phone (804) — 769-2106	Rockbridge	John W. Heslep, P.O. Box 297, Salem 24143 Phone — (703) 389-3643
Lancaster	Otho L. Mundy, P.O. Box 78, Aylett 23009 — Phone (804) 769-2394	Rockingham	Donald P. Wirt, P.O. Box 1270, Lexington 24450 — Phone (703) 463-5775
Lee	*H. H. Pittman, Jr., Regina 22540 Phone (804) 435-4221	Russell	*R. E. Wilfong, Rt. 5, Box 110 Harrisonburg 22801 — Phone (703) 867-5116
Loudoun	E. T. Rasnic, Box 267, Jonesville 24263 — Phone 346-1599	Scott	Harold P. Street, III, P.O. Box 785, Lebanon 24266 — Phone (804) 889-4111
	T. A. Daniel, Jr., Box 373, Leesburg 22075 — Phone 777-1422	Shenandoah	Joseph J. Gillespie, Nickelsville 24271 Phone 479-2109
	Blake S. Denney, P.O. Box 155, Round Hill 22141 — Phone 338-7972	Smyth	*Fred W. Hottle, RFD 3, Box 1-D, Edinburg 22824 — Phone (703) 984-4654
	Barry F. Lape, 11108 Cavalier Court Fairfax 22030	Southampton	Beecher H. Perry, Rt. 1, Box 85, Sugar Grove 24375 — Phone 677-3526
Louisa	W. L. Parker, Jr., P.O. Box 96, Mineral 23117 — Phone 894-4931	Spotsylvania	*James A. McClenney, P.O. Box 138, Capron 23829 — Phone (804) 658-4108
Lunenburg	Joseph K. Cooke, P.O. Box 86, Kenbridge 23944 — Phone (804) 676-3723	Stafford	Lannie M. Chitwood, P.O. Box 230 Ivor 23866
Madison	Robert S. Crigler, Rt. 231, Box 3-A, Madison 22727 — Phone 948-6337	Surry	*Francis C. Boggs, 829 Churchill Dr. Fredericksburg 22401 — Phone (703) 786-6001
Mathews	Michael R. Keys, Box 47 Bohannon 23021 — Phone (804) 725-5576	Sussex	Robert W. Hayzlett, 1016 William St., Apt. 333, Fredericksburg 22401 — Phone 373-0291
Mecklenburg	Robert A. Clark, Rt. 2, Box 519C, Clarksville 23927 — Phone (804) 374-2438	Tazewell	Stuart P. Doggett, RFD 3, Box 122E, Stafford 22554 — Phone (703) 659-2391
Middlesex	Herbert A. Foster, Star Rt., Box 37-3 Bracey 23919 — Phone (804) 636-2956	Warren	Kenneth D. Shifflett, General Delivery, Elberon 23846 — Phone (804) 267-2297
	*B. U. Miller, Amburg 23044 Phone — (804) 776-3692	Washington	G. A. Hawks, Stoney Creek 23882 Phone — (804) 246-6911
Montgomery	*William W. Nance, P.O. Box 214, Christiansburg 24073 — Phone 382-8886	Westmoreland	William K. Stump, Rt. 1, Box 84A, Pounding Mill 24637 — Phone 988-6285
Nelson	G. L. Brantley, Box 250A, Faber 22938 Phone — (804) 263-4012	Wise	Bruce L. Downs, 702 Gypsy Avenue Staunton 24401
New Kent	R. L. Griffith, New Kent 23124 Phone (804) 932-4300	Wythe	*J. W. Simpson, Box 180, Front Royal 22630 — Phone (703) 635-5189
Northumberland	James K. Taylor, 957 Lakeshore Dr., Quinton 23141 — Phone (804) 932-3180	York & Hampton	Dennis L. Austin, Village Heights, Apt. 3, Rt. 7, Abingdon 24210 — Phone (703) 628-4503
Northampton	Herman Ray Newcomb, Box 281, Heathsville 23141 — Phone (804) 580-3311	Fredericksburg	*Roy A. Smith, 103 Westwood Estates, Abingdon 24210 — Phone (703) 628-6718
Nottoway	Michael G. Caison, Eastville 23347	Richmond City	R. O. Rowe, Rt. 2, Box 397, Warsaw 22572 — Phone (804) 493-8140
Orange	Cameron Gray, Rt. 2, Box 149 Blackstone 23824 — Phone (804) 292-5446	Suffolk	R. W. Marshall, P.O. Box 239, Wise 24293 — Phone (703) 328-6410
Page	*John M. Hutchens, P.O. Box 1001 Orange 22960 — Phone (703) 672-5846		Robert Gayle Mitchell, General Delivery, Rural Retreat 24368 — Phone (703) 686-5151
Patrick	Robert W. Inskeep, Rt. 1, Box 233, Hilldale, Luray 22835, Phone (703) 743-6279		E. Goodman Mitchell, Jr., 1825 Meadowview Drive, Denbigh 23602 — Phone (804) 877-9346 (See Spotsylvania)
Pittsylvania	*Thomas J. Clement, P.O. Box 1, Stuart 24171 — Phone 694-3758		Richmond Office — Phone (804) 786-4974
Powhatan	*Samuel V. Pickrel, Rt. 3, Box 204-D, Gretna 24557 — Phone 656-2118		James G. Pritchard, P.O. Box 316, Suffolk 23434 — Phone (804) 986-4981
Prince Edward	J. A. Tramel, Rt. 1, Box 163, Danville 24541 — Phone 797-5368		Randy R. Townsend, P.O. Box 1482, Chesapeake 23320 — Phone (804) 483-1604
Prince George	James C. Holt, Rt. 4, Box 35H, Powhatan 23139 — Phone (804) 598-3597		*Donald W. Hinckley, P.O. Box 5124, Virginia Beach 23455 — Phone (804) 464-4174
	Ernest M. Ashworth, Rt. 2, Box 148A, Farmville 23901 — Phone (804) 392-8450		James L. Ogden, Rt. 3, Box 3222-B, Virginia Beach 23457 — Phone (804) 426-2729
	Garland Foster, Rt. 3, Box 6, Prince George 23875 — Phone (804) 733-6499		Sidney J. Akers, P.O. Box 1235, Chesapeake 23320 — Phone (804) 547-8480

# Commission of Game and Inland Fisheries Organization Chart

